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RECENT MARKET EVENTS AND THE FOUNDATION FOR GLOBAL MARKET CRISES: HEDGE FUNDS*

Leon M. Metzger**

My role today is to give you an overview of the recent market meltdown involving Long-Term Capital Management¹ this past fall. I think that most of those who will be speaking today will

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1. On September 23, 1998, with the encouragement of the Federal Reserve Bank of New York, fifteen major banks injected \$3.625 billion into Long-Term Capital Management, L.P. [hereinafter LTCM], a private investment fund engaged in highly leveraged securities transactions based on advanced mathematical models, to prevent its collapse and potential default on an estimated \$125 billion it had borrowed on \$2.2 billion in capital. See Anita Raghavan & Mitchell Pacelle, *To the Rescue? A Hedge Fund Falters, so the Fed Persuades Big Banks to Ante Up; Firms to Lend \$3.6 Billion as Long-Term Capital Loses on its Bond Bets*, WALL ST. J., Sep. 24, 1998 at A1 (reporting on an "extraordinary gathering" in which the Federal Reserve Bank of New York persuaded large banks to invest over \$3.5 billion in LTCM in return for a 90% ownership stake, and to prevent a financial crisis should it unwind its positions); Steven Mufson, *What Went Wrong? Fund's Big Bettors Learned that Risk Trumps Math, History*, WASH. POST, Sep. 27, 1998, at H1 (corrected Sep. 29, 1998) (listing fourteen major banks and institutions which invested a total of \$3.6 billion); Steven Syre, *Fleet, BankBoston in Syndicate Backing Troubled Hedge Fund*, BOSTON GLOBE, Sep. 26, 1998, at F1 (reporting that Fleet Financial Group had loaned \$25 million to LTCM as part of the bail-out); Joseph Kahn & Peter Truell, *Troubled Investment Fund's Bets Now Estimated at \$1.25 Trillion*, N.Y. TIMES, Sep. 26, 1998, at A1 (citing financiers' estimates that LTCM had leveraged borrowings of \$125 billion into \$1.25 trillion in open trading positions). For comprehensive information on LTCM's background and near-collapse, see Michael Lewis, *How the Eggheads Cracked*; N.Y. TIMES, Jan. 24, 1999, § 6, at 24; Carol J. Loomis, *A House Built on Sand*, FORTUNE, Oct. 26, 1998, at 110; Michael Siconolfi, Anita Raghavan & Mitchell Pacelle, *All Bets are Off: How the Salesmanship and Brainpower Failed at Long-Term Capital*; WALL ST. J., Nov. 16, 1998, at A1.

cover some of the aspects of my overview in greater detail. Before I tell you what went wrong, let me talk to you about what I will call "the state of the world."

THE INTERNATIONAL MARKETPLACE AND HEDGE FUNDS

We are now dealing in an international marketplace. If someone sneezes in Asia, we will catch a cold here in the United States. We have sophisticated communications and computer technology, and that has expanded cross-border investment and trade. Technology has also increased the flow of information, allowing markets to react more quickly and sensitively to the slightest change.

What exactly are hedge funds? So much diversity exists in the world of hedge funds that there is no established definition of a "hedge fund." I will try, however, to give you a one-sentence definition. Hedge funds are private investment companies, usually in the form of partnerships, limited liability companies, or offshore corporations, that may or may not employ "hedging" strategies; they are largely, but not entirely, unregulated; sometimes use leverage; use a variety of alternative investment techniques, such as short-selling and derivatives, and often pay handsome compensation to those who run them.²

Why the use of leverage? Some market-neutral funds' strategies seek to take advantage of what I call "small market inefficiencies," which are two or more securities that are statistically mispriced relative to each other. Often, the differences are so small that without the use of leverage, the profits would not be acceptable to investors. Furthermore, these trades with low profit margins are very low-risk trades, and, therefore, more leverage would be reasonable. The amount of leverage that is prudent in any situation depends upon the type of trade. Riskier trades do not need as much leverage because there is greater profit potential in the underlying trade itself. A fund would use less leverage in higher-risk trades.

2. See *Special: The Risk Business*, *ECONOMIST*, Oct. 17, 1998, at 21-22 (discussing common characteristics of hedge funds and the wide range of strategies they employ).

For example, *Fortune* magazine reported that for one trade that Long-Term Capital Management made, the potential profit, without leverage, was 67 basis points.³ If investors put money in a fund and the rate of return is two-thirds of one percent, the investors are just going to take their money and leave. If you leverage that trade 30 times, however, you have a pretty good rate of return, since two-thirds of one percent times 30 gives you 20 percent.

Using this type of strategy, you see a spread between the yields of two securities; you believe that there is a high probability that the spread will narrow to historical levels and you try to profit from the narrowing spread. By way of illustration, here is an example:

Figure 1

	Closing \$ Stock X	Closing \$ Stock Y
Monday	\$10	\$10
Tuesday	\$11	\$9
Wednesday	\$10	\$10
Thursday	\$9	\$11
	Expected Closing \$	Expected Closing \$
Friday	\$10	\$10

Observe the closing prices for the two stocks in Figure 1, *X* and *Y*, on Monday, Tuesday, Wednesday, and Thursday. You would expect stock *X* to close at 10 and *Y* to close at 10 on Friday. Since you think that stock *X* is under-priced and stock *Y* is over-priced, your strategy at the opening of trading on Friday is to buy stock *X* and sell short stock *Y*. If, in fact, you are correct, and both close at 10 on Friday, you will have made one dollar on *X* and you will have made one dollar on *Y*, so your net profit will be two dollars. That is the type of trading that people try to do.

3. See Carol J. Loomis, *supra* note 1, at 114 (reporting that a LTCM top manager expected an annual return of sixty-seven cents on each dollar at risk in a certain investment).

There are different types of strategies. The strategy I just illustrated is called "statistical arbitrage." It uses advanced mathematical techniques and computer capabilities to identify these price fluctuations.

A second is called "convertible-bond arbitrage," where you buy a convertible bond and sell short the underlying common stock, and again try to capture what you believe to be the relative mispricing between the two securities. Figure 2 shows a simple example of a convertible-arbitrage hedge in which an investor simultaneously buys a bond for \$1,000 and sells short the amount of underlying stock that equals 80% of the value of the bond (\$800 worth of stock). Both the proceeds from the short sale and the bond earn interest. If interest rates are 10%, the investor would earn \$100 (10% of \$1,000) on the bond plus \$80 (10% of \$800) on the proceeds from the short sale less, say, \$20 in expense for borrowing the stock that was sold short. Accordingly, the investor's static return on investment is 16% (\$160 divided by \$1,000).

The profits from a convertible bond hedge may also be substantial when the hedge is unwound. Since the market value of convertible bonds is based, in part, on the value of the stocks into which they are convertible, both classes of securities of the same company usually move up or down in market value together.

If the stock doubles in price (Scenario 1), the bond price will tend to double as well, resulting in a \$1,000 gain on the bond. Conversely, the investor will repurchase for \$1,600 the stock that was sold short for \$800, producing an \$800 loss. Adding the bond profit to the short sale loss would yield a \$200 profit, besides the 16% yield.

On the other hand, should the stock price decline by 50% (Scenario 2), the bond price will tend to fall as well, but at a lesser rate, say 20%. It declines less than the stock because it is a higher yielding instrument senior to the stock. This should result in a \$200 loss on the bond. Conversely, the investor might repurchase for \$400 the stock that was sold short, producing a \$400 gain. The net of the bond loss and short sale gain would yield a \$200 profit besides the 16% yield.

Figure 2

<u>Example</u>	
Purchase Convertible Bond	\$1,000
Sell Stock Short	\$800
Dividend	\$0
Convertible Bond Yield (at 10%)	\$100
Short Rebate	\$60
Total Gain	\$160
Convertible Hedge Return (static)	16%

	Scenario 1		Scenario 2		Scenario 3	
	stock doubles	gain/ loss	stock declines 50%	gain/ loss	inverted market: bonds decline while stocks rise	gain/ loss
Sell Bond	+2,000	+1,000	+800	-200	+700	-300
Cover Short	-1,600	-800	-400	+400	-850	-50
Net from Trading		+200		+200		-350
Bond Yield (@10%)		+100		+100		+100
Short Rebate		+60		+60		+60
Total Gain		+360		+360		-190

Return**36%****36%****-4%**

On the other hand, should the stock price decline by 50% (Scenario 2), the bond price will tend to fall as well, but at a lesser rate, say 20%. It declines less than the stock because it is a higher yielding instrument senior to the stock. This should result in a \$200 loss on the bond. Conversely, the investor might repurchase for \$400 the stock that was sold short, producing a \$400 gain. The net of the bond loss and short sale gain would yield a \$200 profit besides the 16% yield.

In the rare event that the bonds decline while the stocks rise (Scenario 3), which is uncommon because the stock and convertible-bond prices usually move in the same direction, then

if the bond that was bought for \$1,000 were worth \$0.70 on the dollar, the sale would produce a \$300 loss. The investor would also need to repurchase the \$800 of stock that was sold short for a higher price (assume \$850), producing a \$50 loss. The 16% yield would not be enough to offset the bond and short-sale loss of \$350.

A third strategy type is called "fixed-income arbitrage," which involves the purchase of two bonds that are statistically mispriced relative to each other. For example, historically the yield of the sovereign debt from Country A is at, say, 25 basis points above the equivalent U.S. Treasury security's yield. You observe that the spread widens from 25 basis points to 75 basis points. The trade, therefore, would be for you to go ahead and buy the under-priced bond from Country A and sell short the over-priced U.S. Treasury security, since you expect the spread to drop to its historical level, from 75 to 25.

Traders use risk-assessment models to evaluate the risks of their positions. The typical model looks at the events most likely to occur. I assume that the traders did consider the possibility of a market meltdown, but they probably did not, at least this past summer, assign as much probability to a market meltdown as they should have. The models may have tended to ignore the low-probability, catastrophic, what I call "high stress" or "high impact" type of events, and in these models, market crashes have a low probability.

As I suggested when I illustrated Figure 1, relative-value traders base future assumptions on the history of market spreads. If the spreads were stable in the past, they are expected to revert to those stable levels. The traders also may assume that they can exit their positions quickly. There may not have been that much allowance for liquidity risk in the unlikely event of a worldwide credit crunch. It is important to remember, however, that it is impossible for any mathematical model to assess completely, in advance, all possible risks that could occur in both usual, and certainly in unusual, market conditions.

Besides "classic" hedge funds, it is fair to say that the proprietary-trading desks of investment banks and commercial banks are also hedge funds. They often take the same positions as hedge funds, and sometimes they may even place those same

trades using greater capital, and even greater leverage than the hedge funds themselves. You do not get to hear about that, however, because that information gets swallowed up in the results of the bank.

THE CHAIN OF EVENTS LEADING TO THE MELTDOWN

The chain of events began about one year ago. There were problems in Asia. Currency crises led to an increase in emerging-market bond yields.⁴ Then, Russia devalued its currency and defaulted on its debt.⁵ Although the Russian positions were not large in world markets, they presented more problems because there was suddenly a fear that other sovereign debt could also default. Investors thought that the International Monetary Fund ("IMF") would bail Russia out, but the IMF did not prevent the default.⁶ This sparked a fear that other countries would not be bailed out by the IMF, either.

In the United States, this resulted in a flight to quality.⁷ As spreads widened, investors sold their emerging market debt because of the increased risk. Furthermore, those who lost a great deal in Russia sold in other markets to reflect their diminished equity. Remember, if you are using leverage and you

4. See *The Risk Business*, *supra* note 2, at 23 (discussing the effect of currency crises in 1998 on emerging-market bond yields).

5. See *Regimes in a Fix: Adjustable Exchange Rates and Free Capital Flows do not Mix. If Crises are to be Avoided, Countries Must Choose Between Them*, FIN. TIMES, Aug. 19, 1998, at 18 (reporting that on one day in August 1998, Russian authorities caused a general default and abandoned its currency stabilization policy by simultaneously devaluing its currency, restructuring its domestic debt, and imposing capital controls as well as a ninety-day moratorium on foreign commercial debt).

6. See Franklin R. Edwards, *Hedge Funds and the Collapse of Long-Term Capital Management*, 13 J. ECON. PERSP. 189, 203 (1999) (noting that prior to Russia's default, international creditors and investors "may well have believed that major western countries and the IMF would not permit a default by a major country, like Russia, to occur.").

7. See Clay Harris, *A Watershed Week for the World's Emerging Markets—Contagion Russia 'Redefines International Financial Landscape'*, FIN. TIMES, Aug. 29, 1998, at 2 (reporting that Russia's default and devaluation caused investors to pull out of emerging markets in a "helter skelter 'flight to quality.'").

have to mark your securities to market, when some of your securities drop in value, you must post additional margin to make up for that drop; but to do that, you must sell other securities to raise the cash. And what happens when there are a lot of sellers but not too many buyers? The prices drop.

Because of the Russian default, some investment banks refused to honor hedge contracts;⁸ the shock then drove yields on dollar-denominated debt securities of emerging-market economies sharply higher. Using the prior example, if your trade was to buy Country A's sovereign debt and short the U.S. Treasury, because of this crisis, the spread would widen from 75 to 150 basis points.

Two things were happening at the same time. Not only did the spread indeed widen, but because of the flight to quality, U.S. government yields declined and bond prices rose. Traders were simultaneously betting that the price of the foreign debt would rise and that the price of U.S. debt would decline. However, just the opposite occurred: U.S. debt price rose and foreign debt declined. This unusual widening of spreads was unexpected.

As a result, the market became more illiquid and the spread rose to 300 basis points, then to 600 basis points. Well, at some point, one's margin calls kick in and the position is no longer maintainable. As prices dropped, the market became illiquid in everything except for the safest securities worldwide, U.S. Treasury bonds.⁹ Market makers feared trading because they did not want to end up on the wrong side of the trade, which further reduced liquidity.

Banks had many of the same positions as hedge funds. The banks' risk management models ordered them to reduce their risk, and that restrained traders from making bids, which further

8. See *The Risk Business*, *supra* note 2, at 23 (noting some investment banks' refusal to honor hedge contracts on the basis that Russia's default was a case of force majeure).

9. See Gregory Zuckerman & Greg Ip, *Ripple Effect: It Isn't Just Investors who are Smarting from Liquidity Crunch; With Dealers Shunning Risk, Would-Be Bond Issuers, IPOs Feel Pinched, Too; A Word From Greenspan*, WALL ST. J., Nov. 6, 1998, at A1 (noting that in August 1998, "[p]rofessionals wouldn't touch anything but U.S. Treasury bonds, the world's safest investment.").

reduced liquidity.¹⁰ Furthermore, the news of LTCM's problems led some banks to assume that other hedge funds had huge loss positions which needed to be unwound, so the banks tightened credit to hedge funds through margin calls and changes in haircuts.¹¹ Some banks forced hedge funds to liquidate positions to raise cash in an illiquid market, which caused a further drop in prices.

What we saw was unprecedented, for all spreads to widen simultaneously, resulting in a worldwide credit crunch. On top of that, open-ended hedge funds that are not traded on an exchange had to liquidate their positions to raise capital for year-end withdrawals by investors, which meant they had to actually realize the losses. They could not stay in these positions and wait for the rebound because of the possibility that they would have to cash out their investors.

It seems that Long-Term Capital Management had highly-leveraged positions, which might have caused price dislocations in the markets if they were all liquidated at once. Banks may have had to rescue LTCM because they held many of the same positions. If LTCM had liquidated its positions in a fire sale, causing prices to drop even further, banks could have lost considerable amounts, which could possibly have caused them to become insolvent.

THE AFTERMATH: CALLS FOR REGULATION

Hedge funds and leverage were used as scapegoats by many in the government and in the media. Many argued that the overuse of leverage could bend the financial markets, and debate arose about whether leverage should be regulated.

10. See *The Risk Business*, *supra* note 2, at 23 (noting that liquidity was tightened due to the response of banks' risk-management models in the wake of the Russian default).

11. "Haircuts" refers to the "formulas used in the valuation of securities for the purpose of calculating a broker-dealer's net capital." BARRON'S DICTIONARY OF FIN. & INV. TERMS 252 (5th ed. 1998). "The haircut varies according to the class of a security, its market risk, and the time to maturity." *Id.*

The lessons of 1994, when we had problems with the use of derivatives, taught us that there should not be regulation in response to what happened.¹² In 1994, hedge funds and banks were much better off being self-regulated. Better risk management practices were implemented, and greater transparency was introduced. The process of self-improvement has already begun; there has been a response. Hedge funds have de-leveraged, they have moved away from risk, and they have promoted transparency by opening their books to their counterparties. Regulations would only drive hedge funds offshore, where they will be less supervised than they are today and still maintain the same market influence.

I am not an advocate of regulation, but I say that if there is going to be regulation, it has to be coordinated with other major financial centers in other countries.¹³ If we do not have international regulation, say, coordinated by the Bank of International Settlements, or all countries agreeing that these are the rules, an arbitrage situation will arise. Those countries that regulate will lose the business and those countries that do not regulate or regulate less will attract the business.

The meltdown resulted from a combination of hedge funds that were perhaps over-leveraged, at the same time as what I'll call a "feeding frenzy" occurred. The competition among lending institutions for the business of some funds that wanted to borrow was so fierce, that some lenders' standards may have been compromised. You can blame the hedge funds, but at the same time, perhaps, the creditors should be guilty of lending without doing enough due diligence.

12. In 1994, three large hedge funds managed by David Askin were liquidated due to a bond market crash, and congressional hearings were conducted to examine whether greater regulation of hedge funds was necessary to protect financial markets. See, e.g., *Hedge Fund Activities in the U.S. Financial Markets: Hearings Before the House Committee on Banking, Finance and Urban Affairs*, 103 Cong. (1994).

13. See Stephen Fay, *How to Control Hedge Funds; The Head of the FSA Tells Steven Fay that only Concerted International Regulation Can Rein in the Masters of the Universe*, INDEP. (London), Oct. 18, 1998, at 26 ("[H]edge Funds can only be regulated internationally. If standards are not uniform in all major markets, the funds will do business where regulation is least robust.").

Hedge funds are good for our economy. They provide liquidity to the marketplace. They take the side of the trade that others do not want to take. Hedge funds make markets more efficient because they find assets whose prices are temporarily out of line with fundamental values and they help establish the true market value of those assets. A May 1998 study published by the International Monetary Fund found that, in general, hedge funds make financial markets more stable, not less.¹⁴

CONCLUSION.

I shall conclude with a couple of personal observations. The first one is that I receive a lot of questions like, "How could a market-neutral fund lose money?" My response is that if a market-neutral fund cannot lose money, then how can it make money? Market-neutral does not mean that there is no possibility of loss; it means that strategies do not depend upon the direction of the market for profit.

The second observation is, as you may have read in the media, that some of LTCM's principals had invested virtually all of their own personal capital in the fund. People say, "Well, why would they do that? What about diversification?" Actually, LTCM's portfolio was diversified. LTCM was in multiple markets, whether it was fixed income or convertible arbitrage, whether it was in the United States, Asia, or Europe. The principals probably felt that they were diversified, but they did not expect a worldwide liquidity crunch. Investors feel comfortable when they know that the principals have invested their own money alongside that of investors, which is why it should not appear unreasonable to you.

Third, I think one of the effects of the fallout is that there will be changes to the tax laws, if not immediately, then within a couple of years. You have probably read that the principals of LTCM, through a bank, ended up doing some sort of trade where they essentially had a call option on their own profits that would

14. BARRY EICHENGREEN & DONALD MATHIESON, *HEDGE FUNDS AND FINANCIAL MARKET DYNAMICS* (International Monetary Fund Occasional Paper No. 166, 1998).

have paid them LTCM gains in seven years.¹⁵ I think the Government has focused on that and is not happy about that result.

The last thing I want to say is that I dealt with the media a lot, and, by and large, they acted responsibly. Occasionally, in the rush to get stories on the wires, in such a competitive business, there was sloppy reporting. However, with few exceptions, the mainstream press was quite accurate and quite responsible in its reporting of what happened.

15. See, e.g., Jeffrey M. Laderman, *Finance: Hedge Funds; UBS Failed Risk Management 101*, BUS. WK., Nov. 9, 1998, at 162 (reporting that in 1997, LTCM's top managers purchased call options on LTCM's stock from UBS for \$266 million).